

Brush Up On Civic CRX Engine Electrical Basics

Part II

Honda Motor Corporation

Battery Inspection and Charging

Inspection

1. Check the battery case for loose parts, cracked case or top. Inspect cells for sulfation. Replace if damaged or sulfated.

2. Check the battery electrolyte level.

Conventional battery:

Check the electrolyte level in each cell. If it's low, add distilled water until the electrolyte rises to the UPPER mark.

Sealed battery:

Check the electrolyte level using the UPPER and LOWER marks on the side of the case, or indicator on the top. If the level is at or below the LOWER mark, or indicator is red, add electrolyte.

Yuasa, Panasonic or Furukawa:

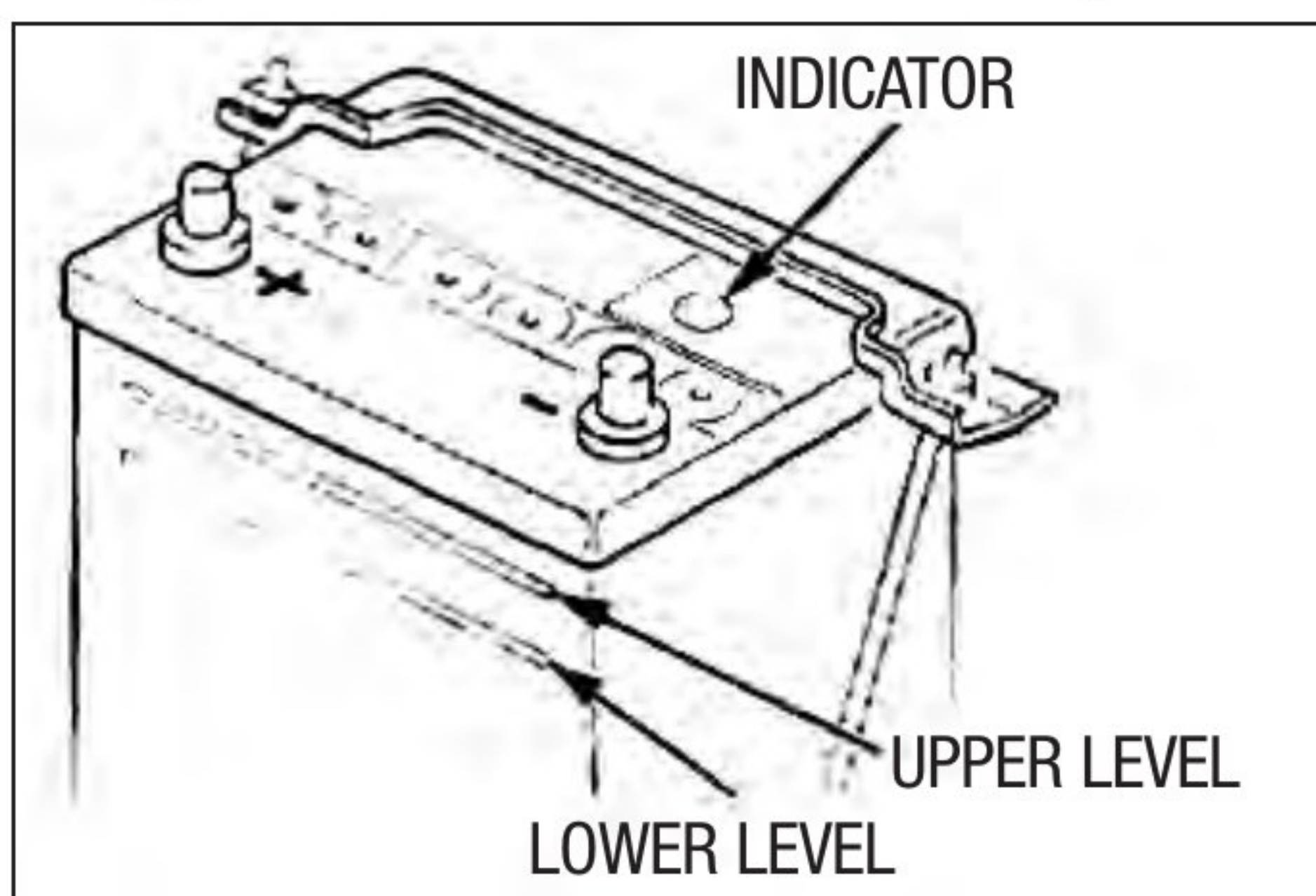
Peel off the strip of tape over the caps, then remove the caps and add electrolyte until the level rises to the UPPER mark or indicator turns blue (see Note in step 3).

Delco or Honda:

Electrolyte cannot be added because these batteries are permanently sealed.



Caution: Battery electrolyte is a sulphuric acid solution. Do not allow it to contact painted surfaces, clothing or skin. If it does, rinse with water immediately to minimize the damage. Do not overfill the battery.

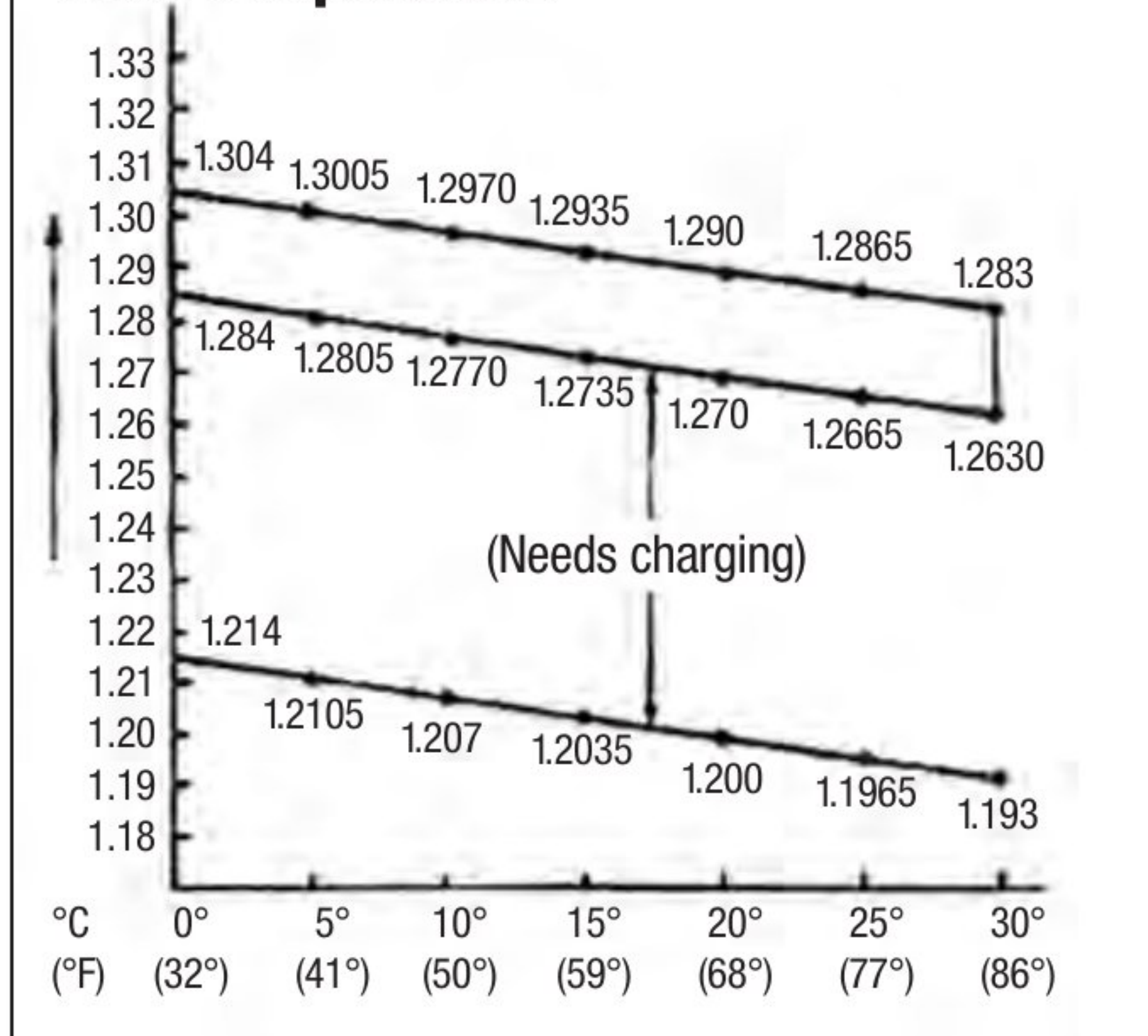


3. Check the electrolyte specific gravity.

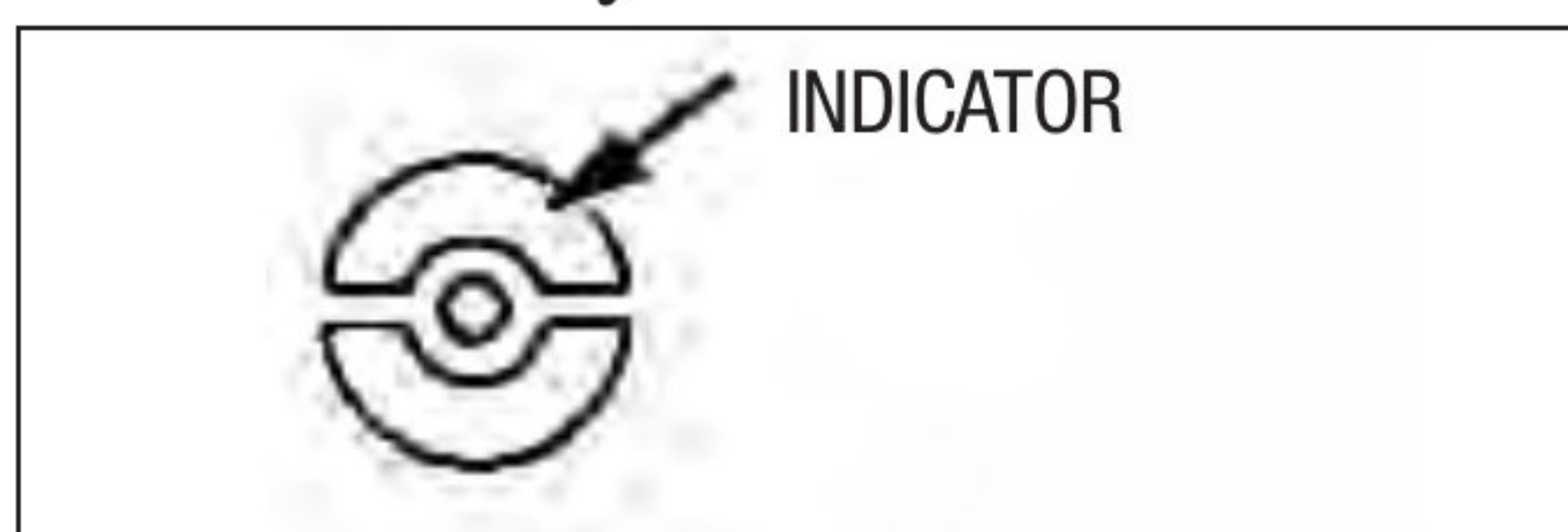
Use a hydrometer and the correct specific gravity range for your temperature. If the reading is at or

below the "Needs charging" level, the battery must be charged.

Variation of Specific Gravity with Temperature



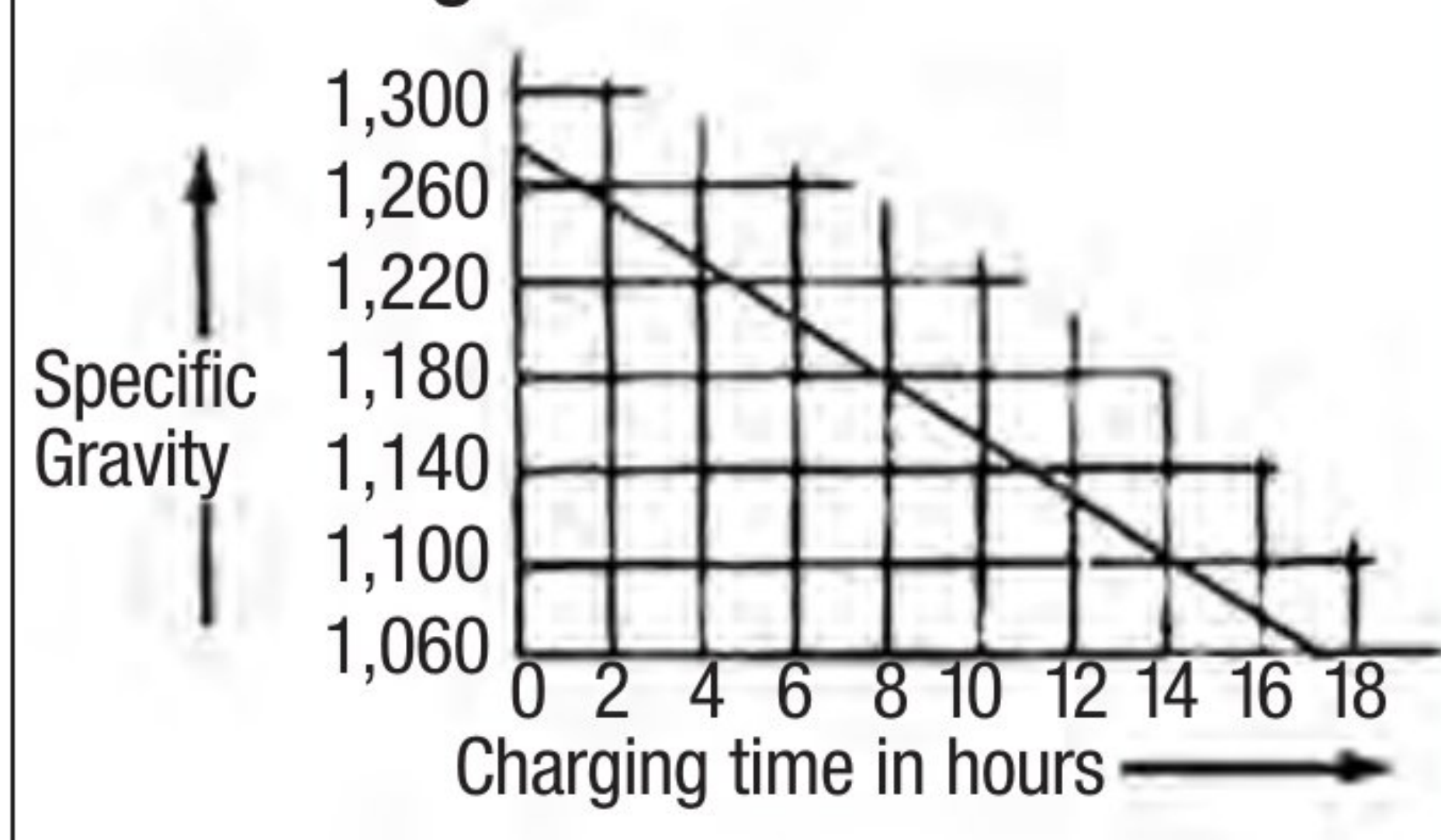
Note: On sealed battery, check the specific gravity of the electrolyte by looking at the indicator on the top of the battery. Charge the battery if the indicator is white.



Charging

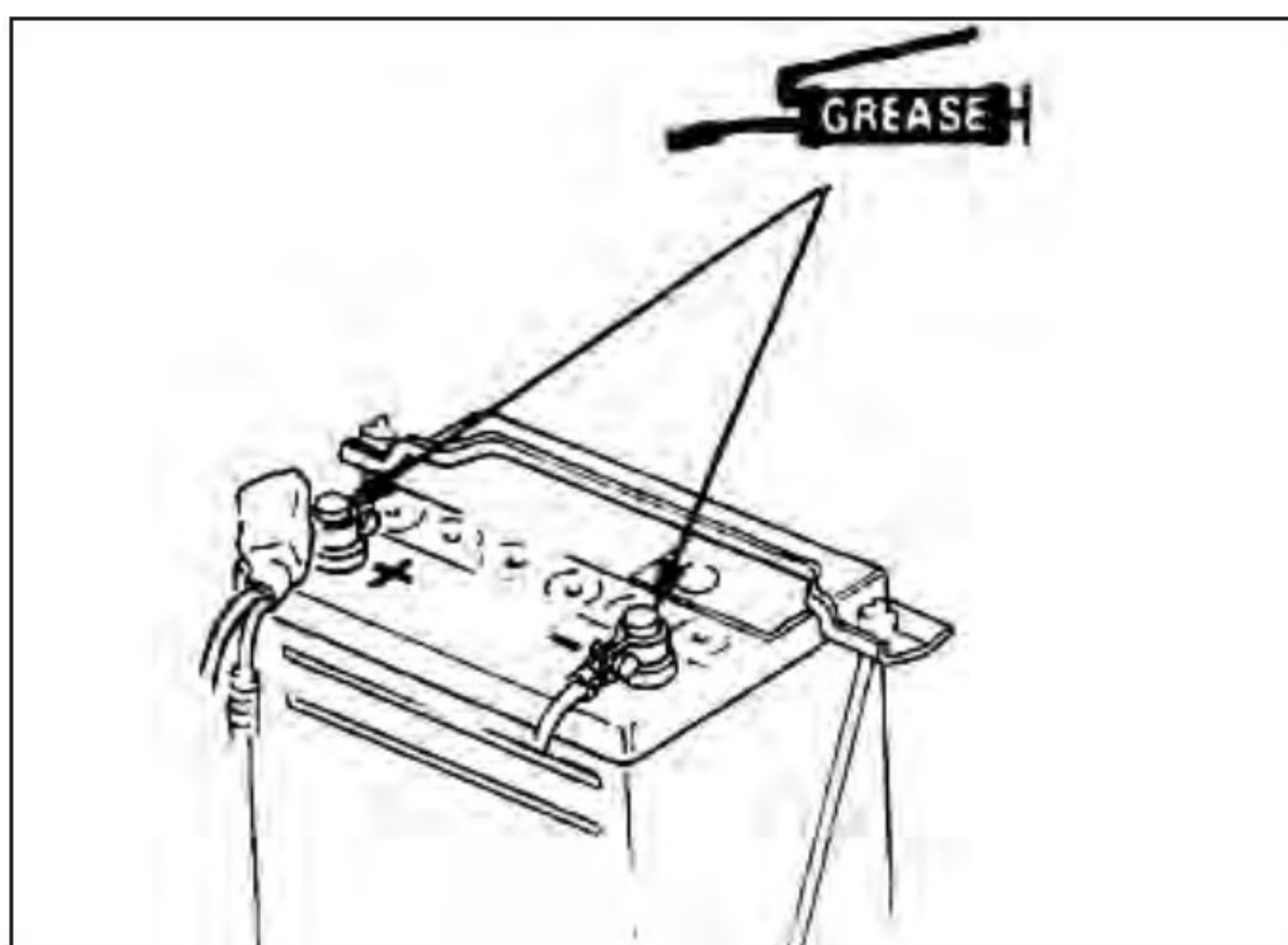
4. Charge at 10 percent of the ampere-hour rating until the battery specific gravity is at least 1.250.

Slow Charge Procedure



Warning: Keep sparks, flames and cigarettes away while charging battery.

5. Keep the battery and terminals clean. If necessary, brush with baking soda solution and flush with clean, lukewarm water. Check for loose terminal clamps.
6. If clamps become corroded inside, clean out with a wire brush or coarse emery cloth. **Note:** Coat



terminals lightly with petroleum jelly to retard corrosion. Baking soda may be mixed with the jelly for additional protection against acid build-up.

Charge Warning Light Test

Note: Before testing, check the wire harness connections and alternator belt tension. Turn the ignition switch on. The charge warning light should come on. If it does not come on, unplug the voltage regulator connector and short the pin of the white/blue wire to ground.

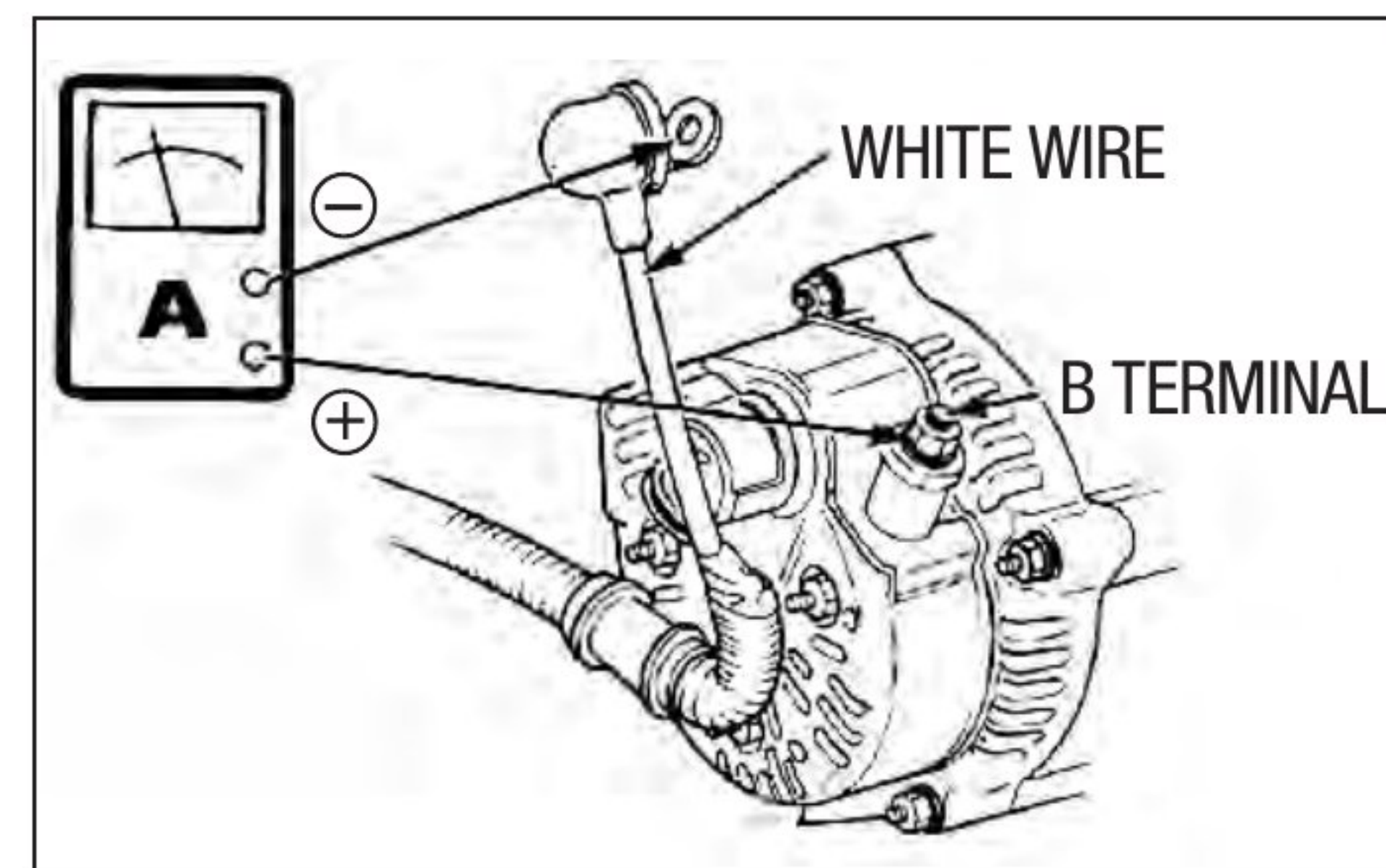
If the warning light still does not come on, check the fuse, connectors (main wire harness, engine wire harness, dashboard wire harness and warning light panel) and related wires for an open circuit. Check the bulb, and replace it if burned out.

Start the engine and let it idle. The charge warning light should go off. If it stays on all the time, check the "alternator sensor" fuse (located in the underhood fuse box), and its wires. If the fuse and wires are OK, check alternator output.

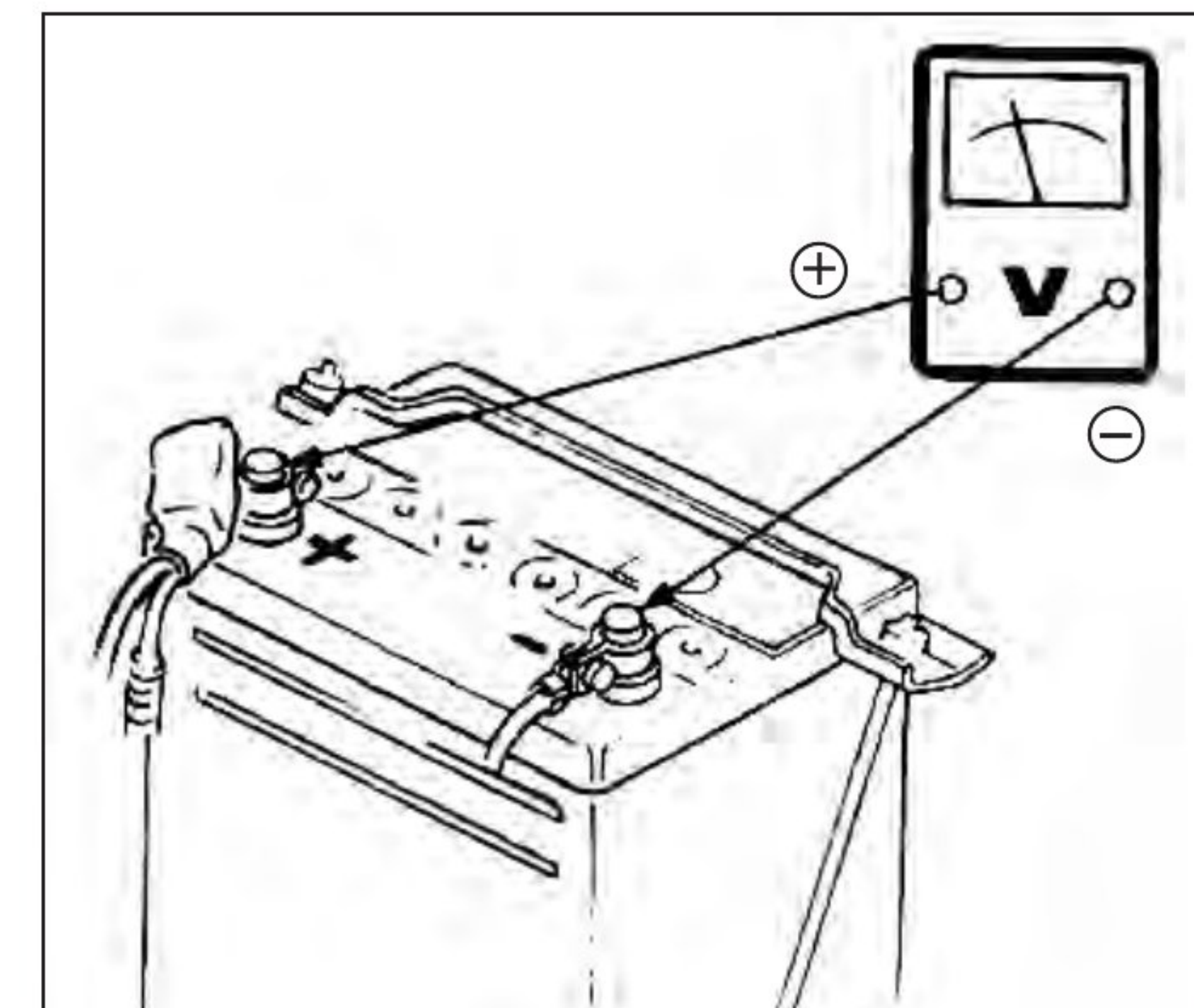
Alternator Output Test

With the engine off, disconnect the white wire from terminal B on the alternator.

Hook up an ammeter (60 amp capacity or higher) at the alternator as shown.



Hook up a voltmeter at the battery as shown.



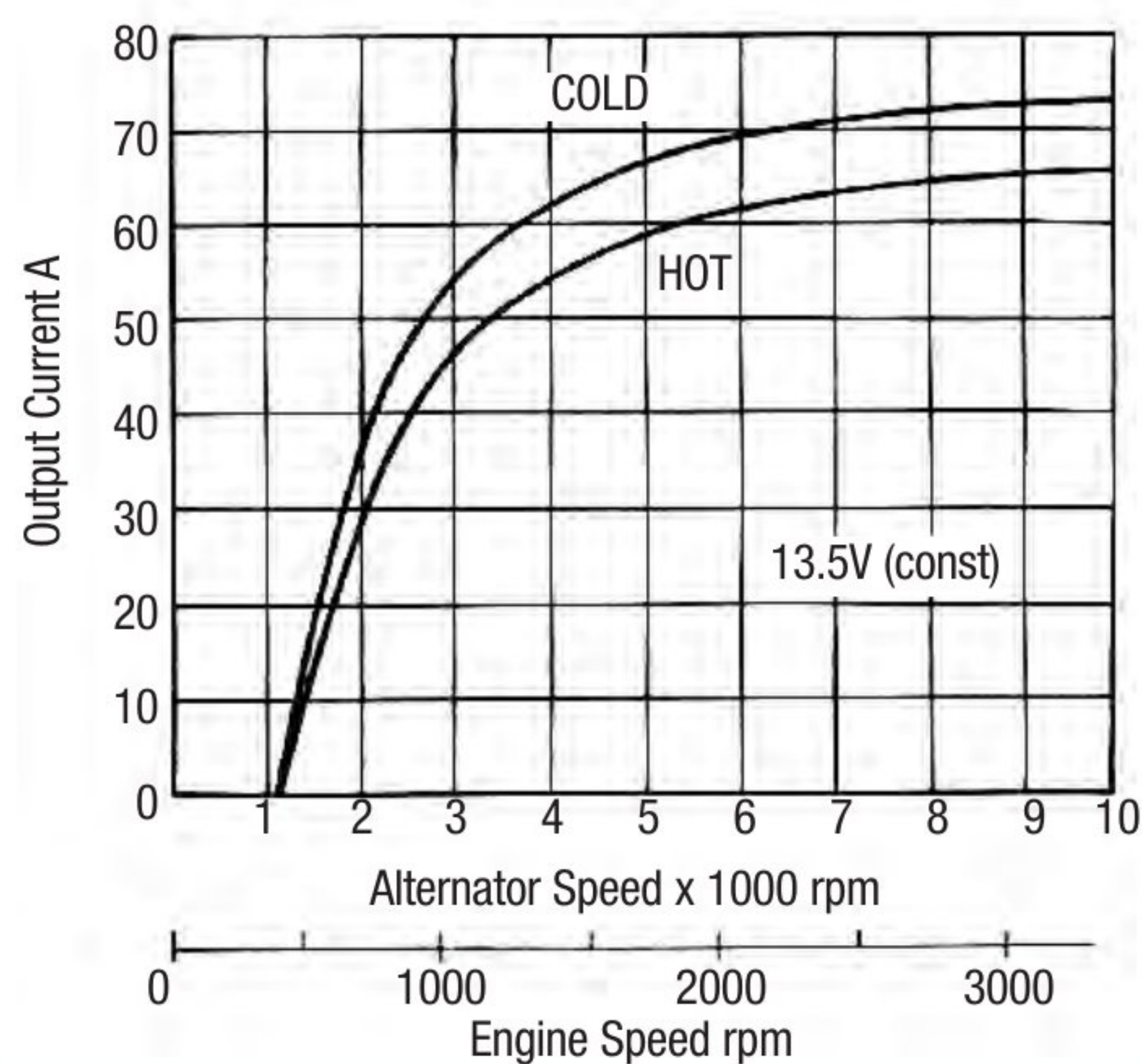
Start the engine. **Caution:** Don't let the voltage reading at the battery exceed 19 volts. If it does, shut the engine off, and then replace the voltage regulator.

Turn on: headlight switch (high beam), rear window defroster switch,

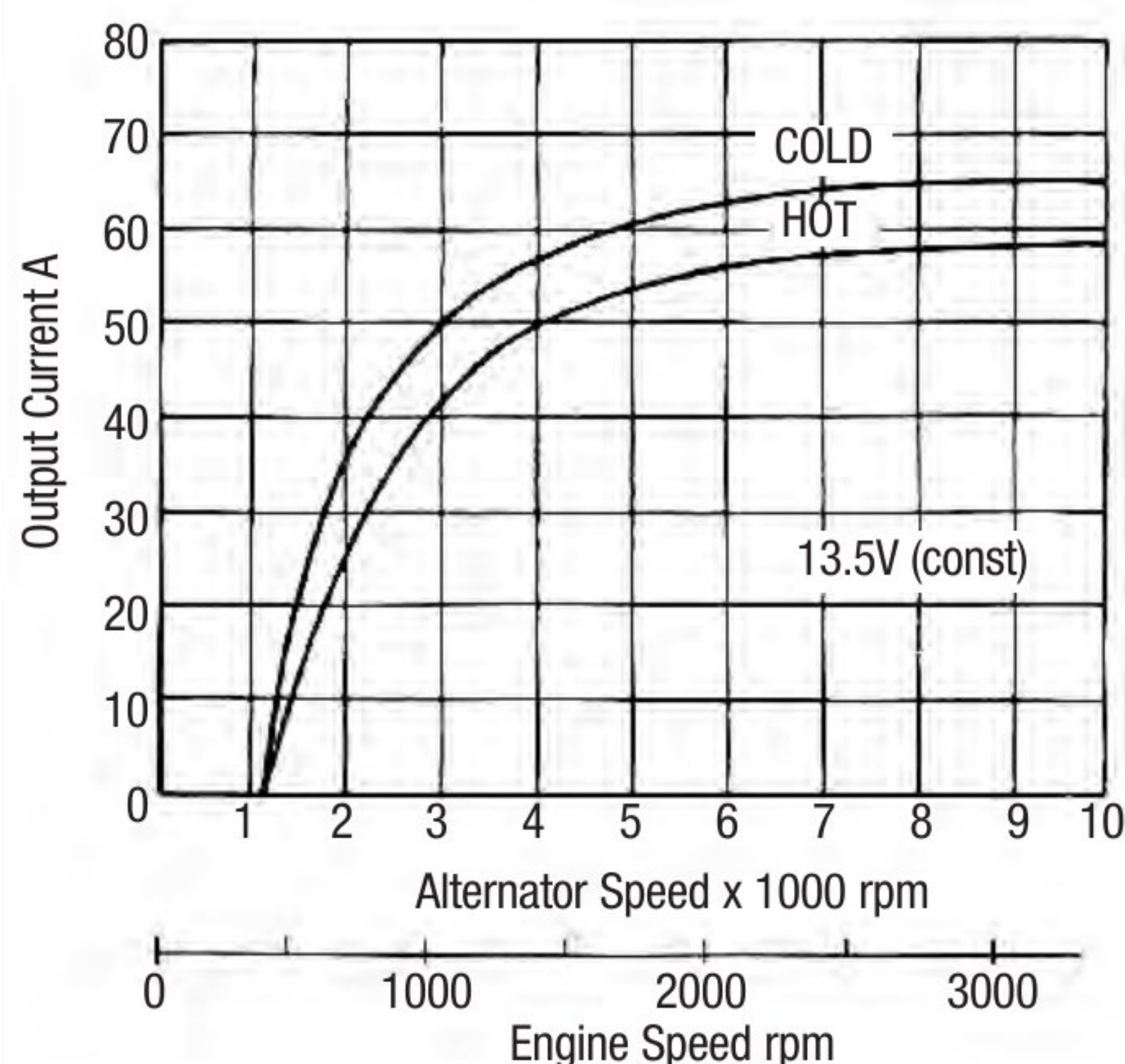
and heater blower switch (HI).

Check the alternator output. If it's within the output curve shown, the alternator is OK. If it's not, this is an indication that the stator coil is open. Repair or replace the alternator as necessary.

Output Curve HF:



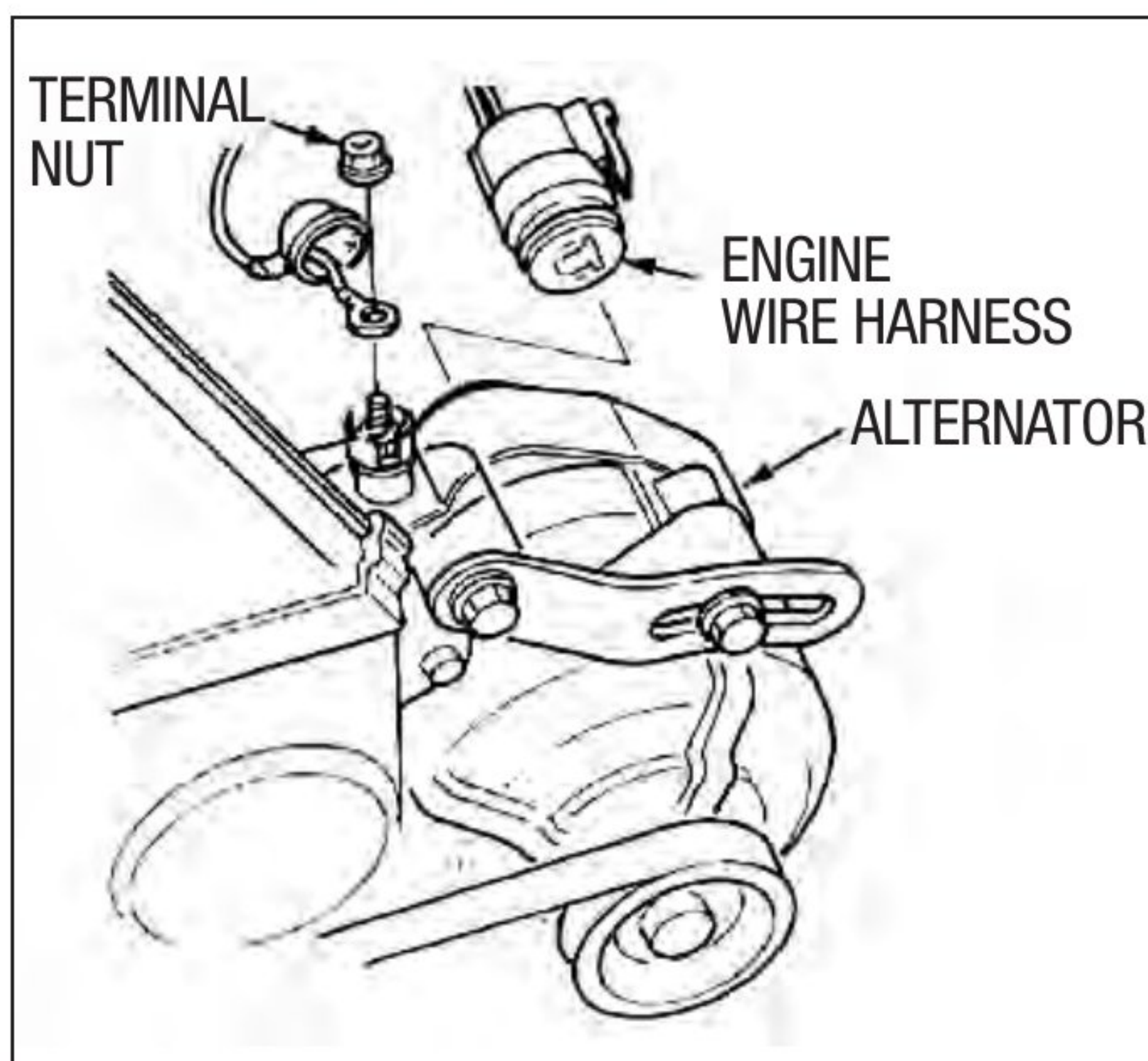
Output Curve DX and SI:



Alternator Replacement

Disconnect the ground cable from the battery negative post.

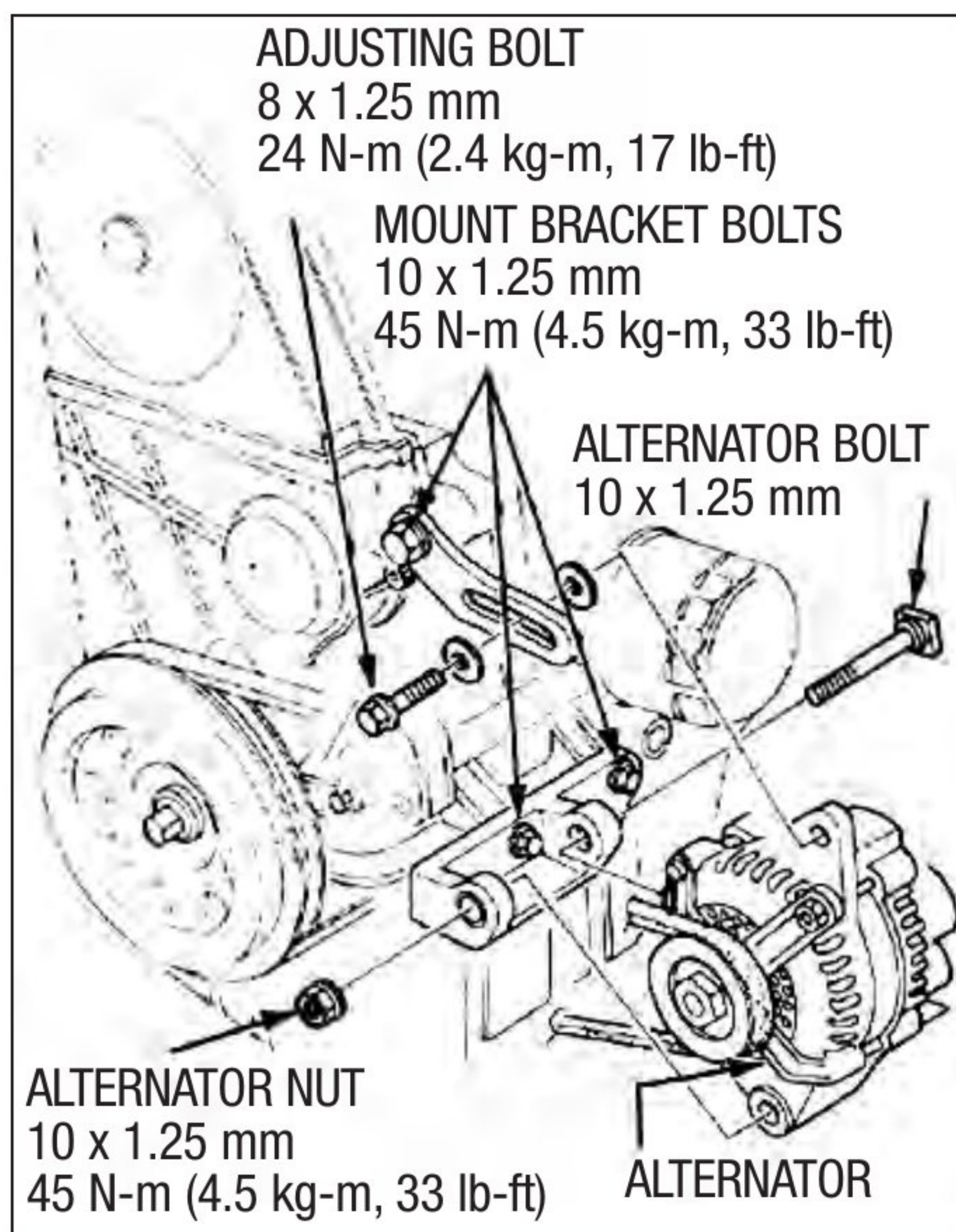
Disconnect the engine wire harness connector from the alternator, and remove the terminal nut.



Remove the alternator adjusting bolt and alternator nut, then remove the alternator belt from the alternator pulley.

Remove the alternator bolt and the alternator.

If necessary, remove the mount bracket bolts, and the upper and lower mount brackets.



Adjust the alternator belt tension after installing.

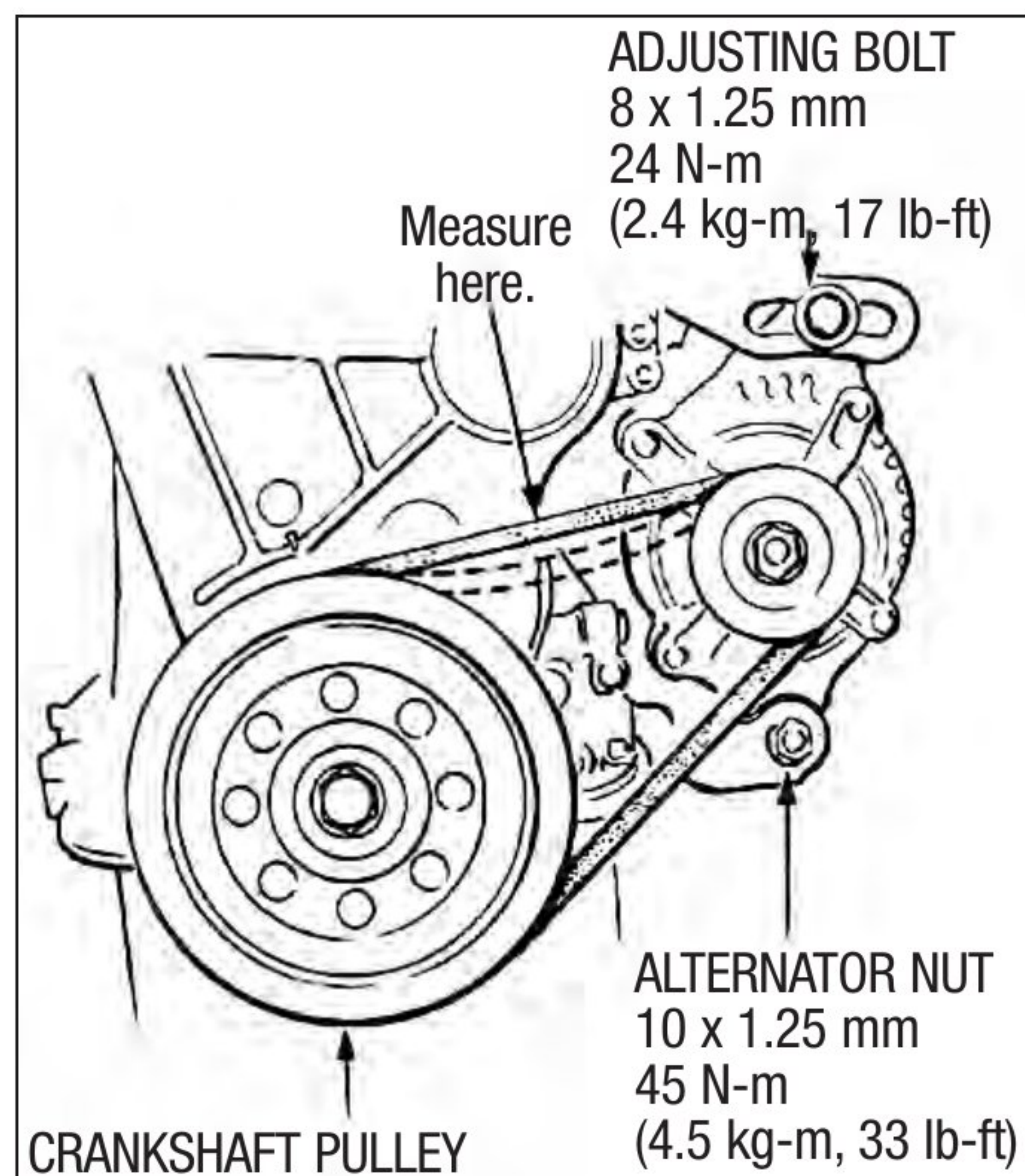
Alternator Belt Adjustment

Apply a force of 98N (10 kg, 22 lb) and measure the deflection between the

alternator and the crankshaft pulley.

Deflection: 7–10 mm (0.28–0.39 in.)

Note: On a brand-new belt, the deflection should be 4–6.5 mm (0.16–0.26 in.) when first measured.



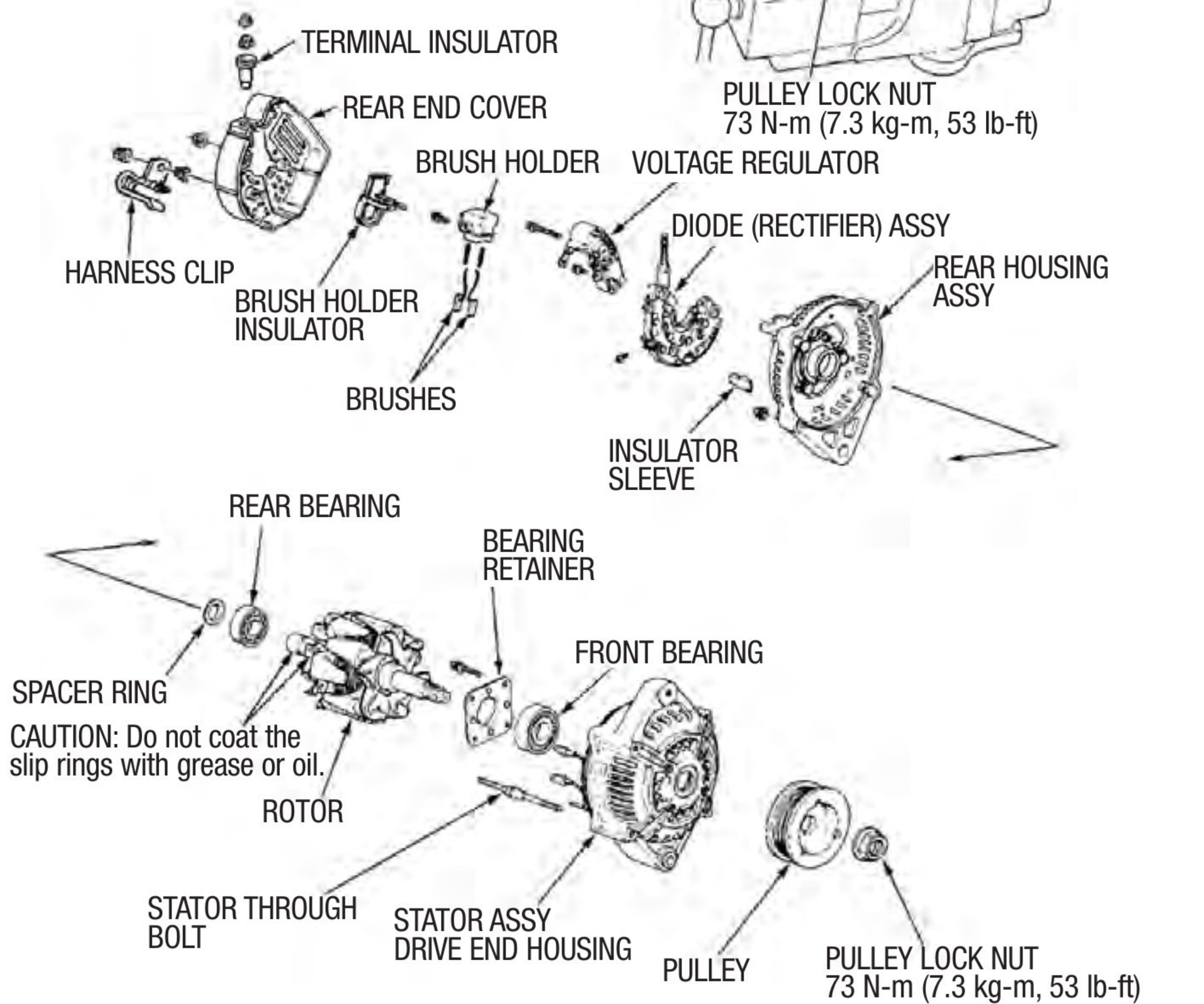
Loosen the alternator adjusting bolt and nut.

Move the alternator to obtain the proper belt tension and retighten the bolt and nut.

Alternator Overhaul

Note: It is only necessary to separate the pulley, drive end housing and rotor when the front bearing needs replacement.

To remove the pulley and rotor, use 10 mm and 22 mm box wrenches to loosen the pulley lock nut. Use an impact wrench to remove the nut if necessary.



Recheck the deflection of the belt.

Alternator Brush Inspection

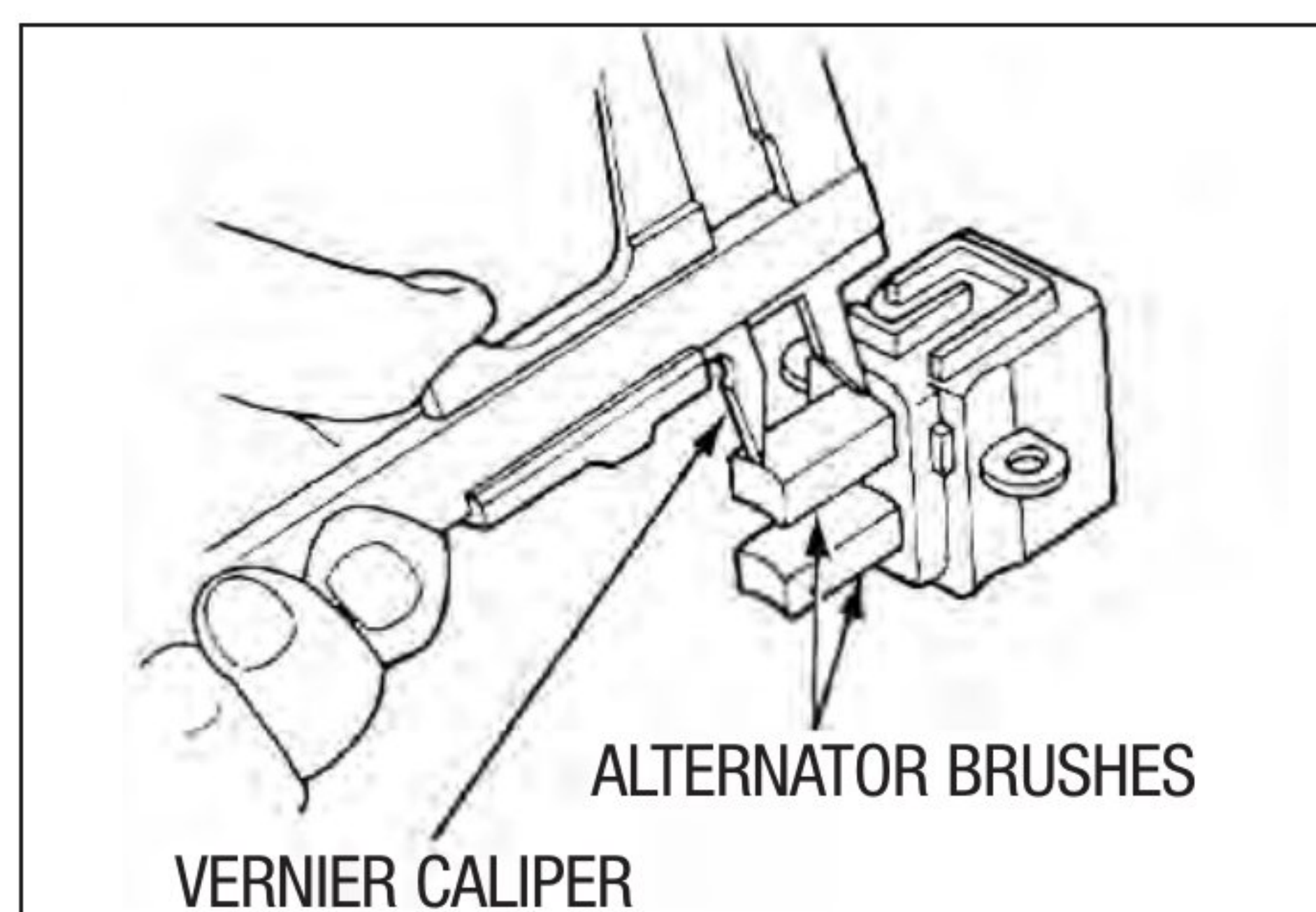
Remove the rear end cover, then take out the brush holder by removing its two screws.

Measure length of the brushes with a vernier caliper

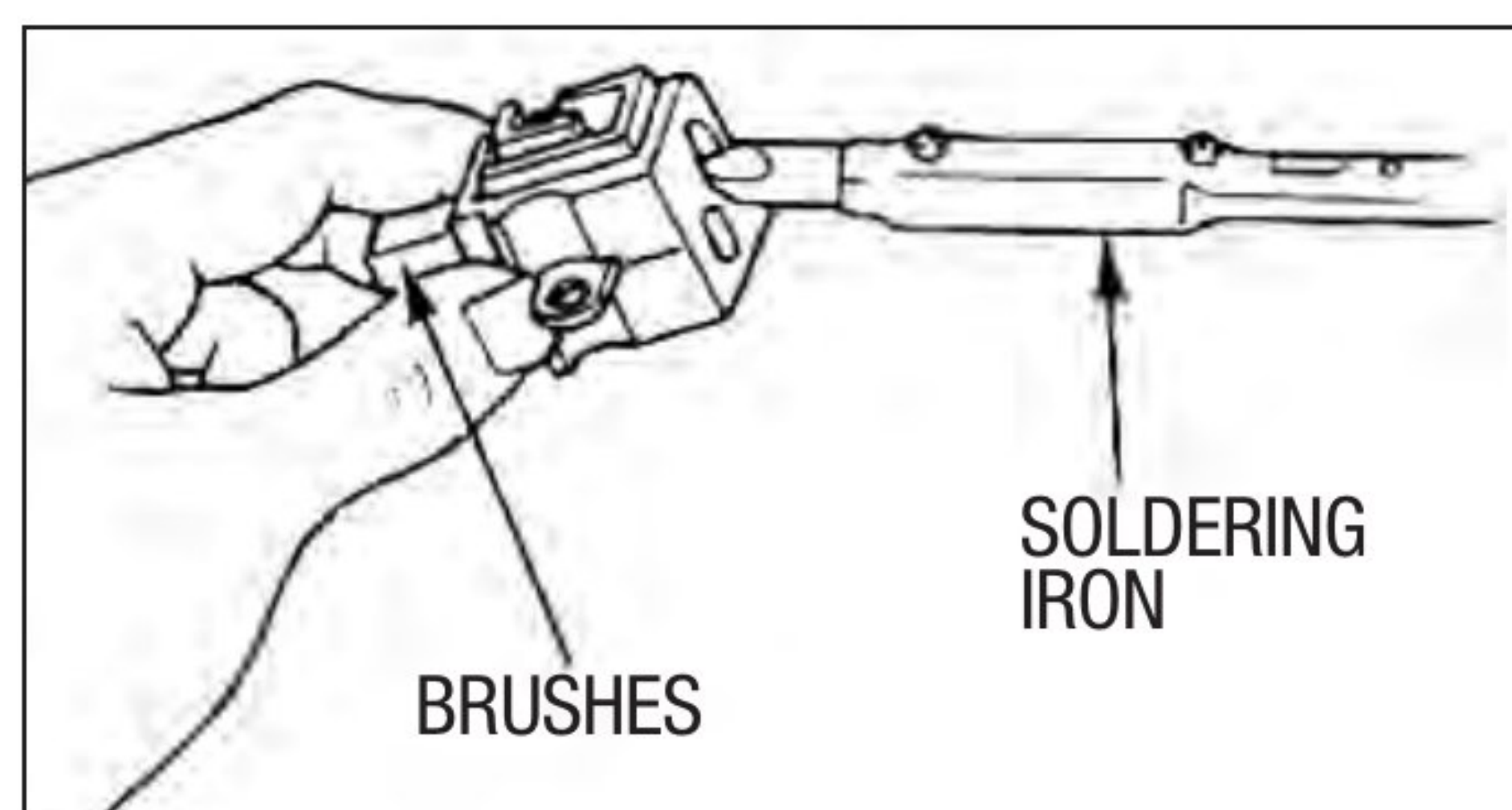
Alternator Brush Length

Standard: 10.5 mm (0.41 in.)

Service Limit: 5.5 mm (0.22 in.)



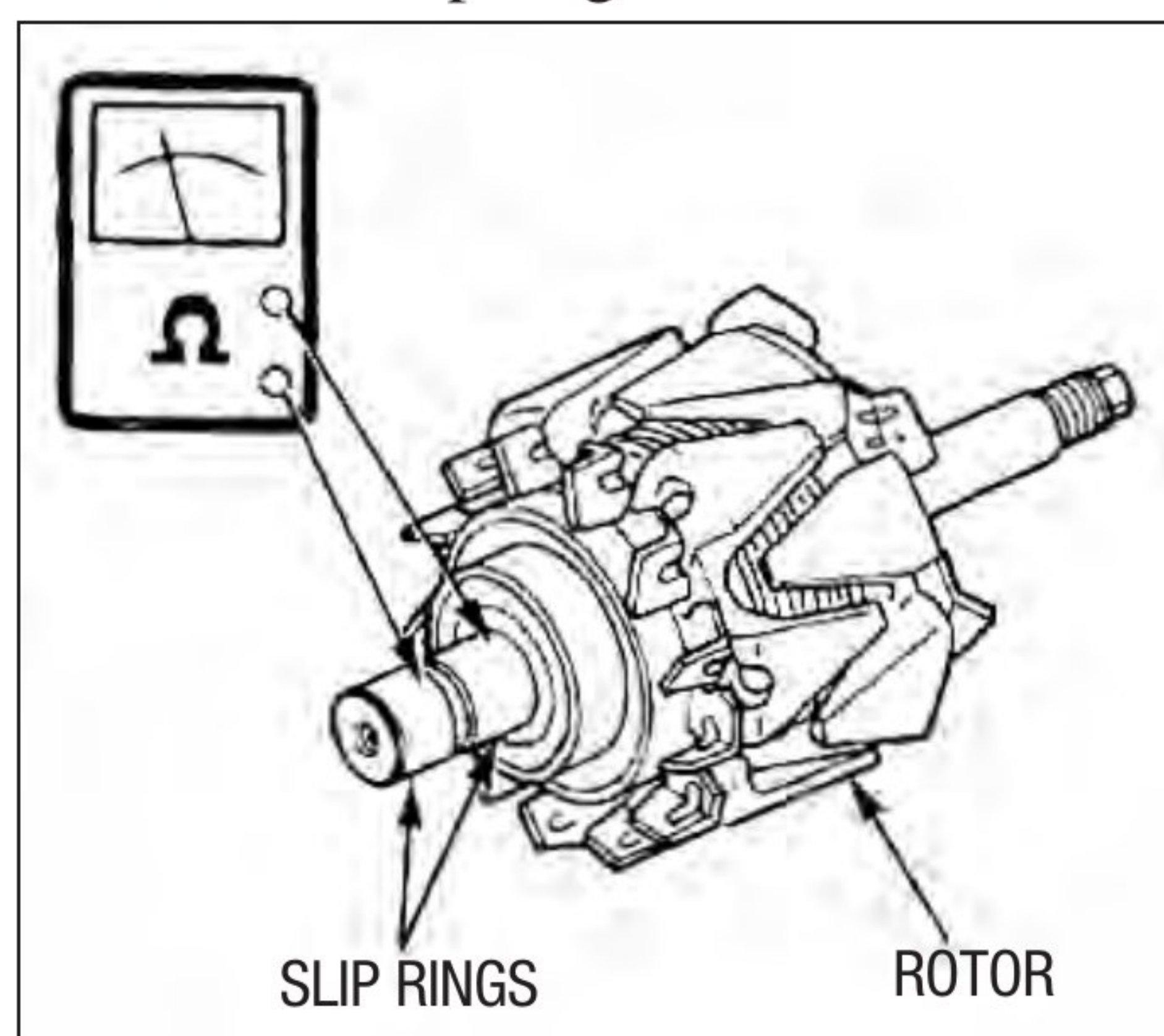
If the brushes are not within the service limit, replace them.



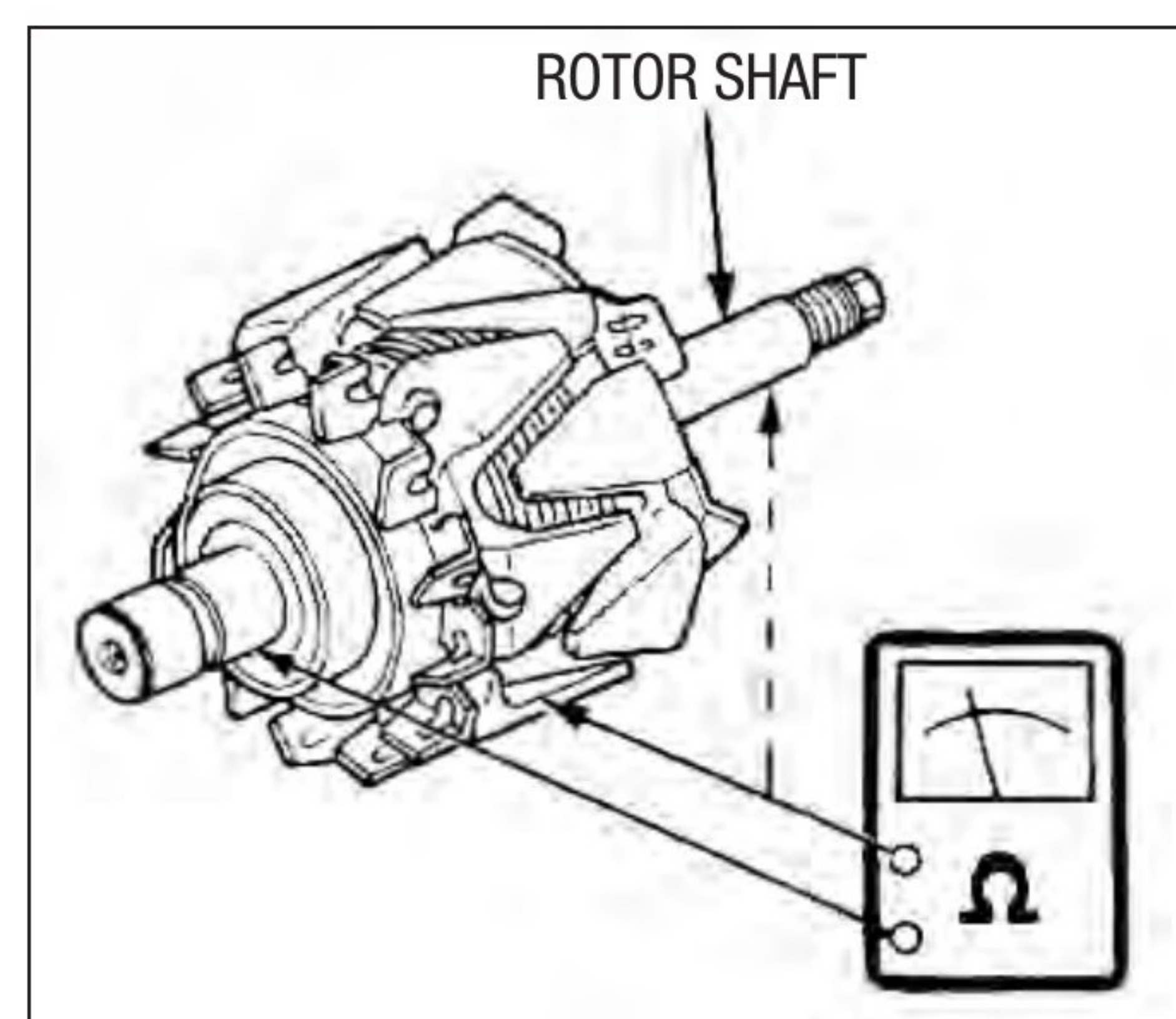
Caution: When replacing the brushes, use only a rosin core type solder or solder joints will corrode.

Rotor Slip Ring Test

Check that there is continuity between the slip rings.



Check that there is no continuity between the rings and the rotor or rotor shaft.

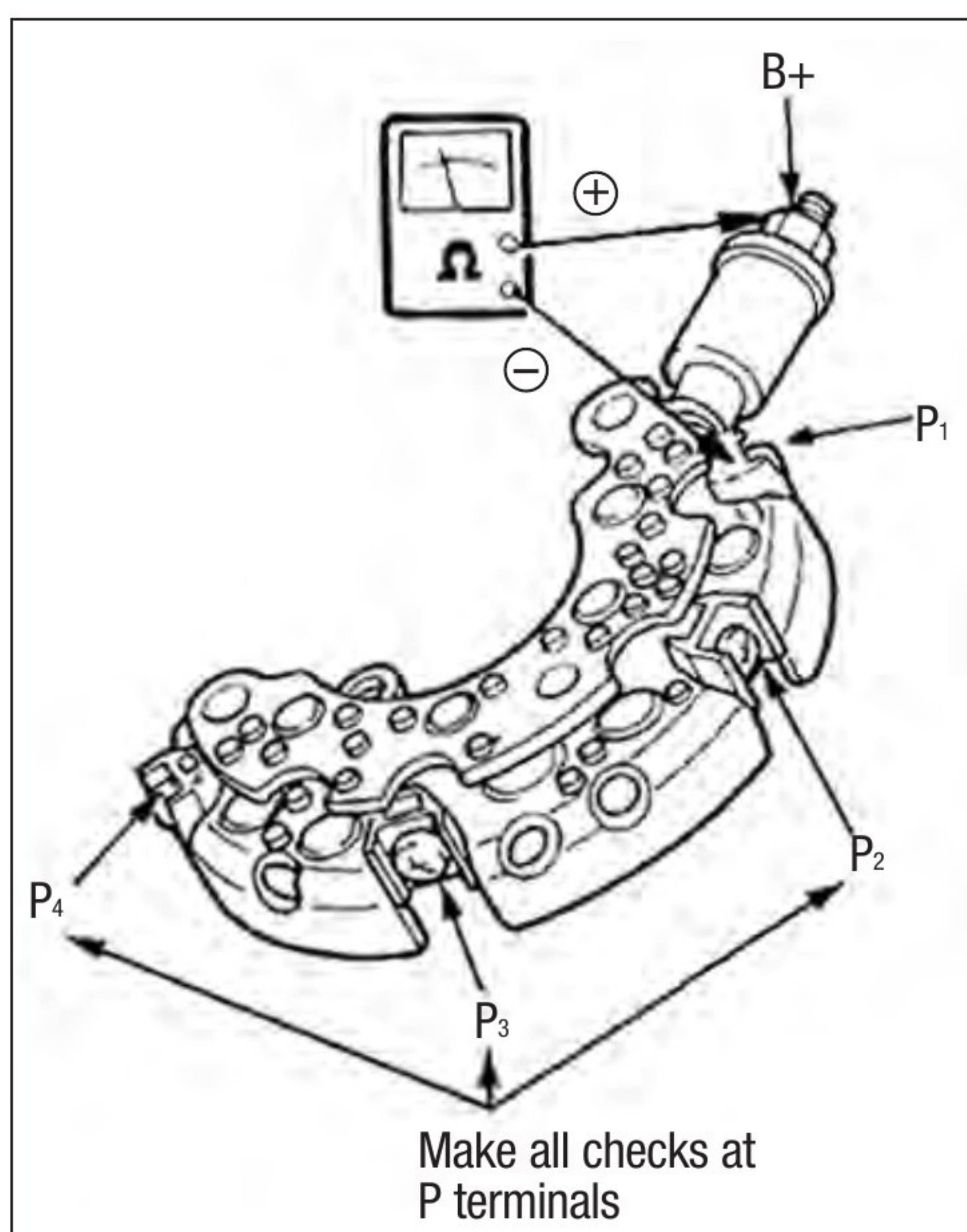


If the rotor fails either continuity check, replace it.

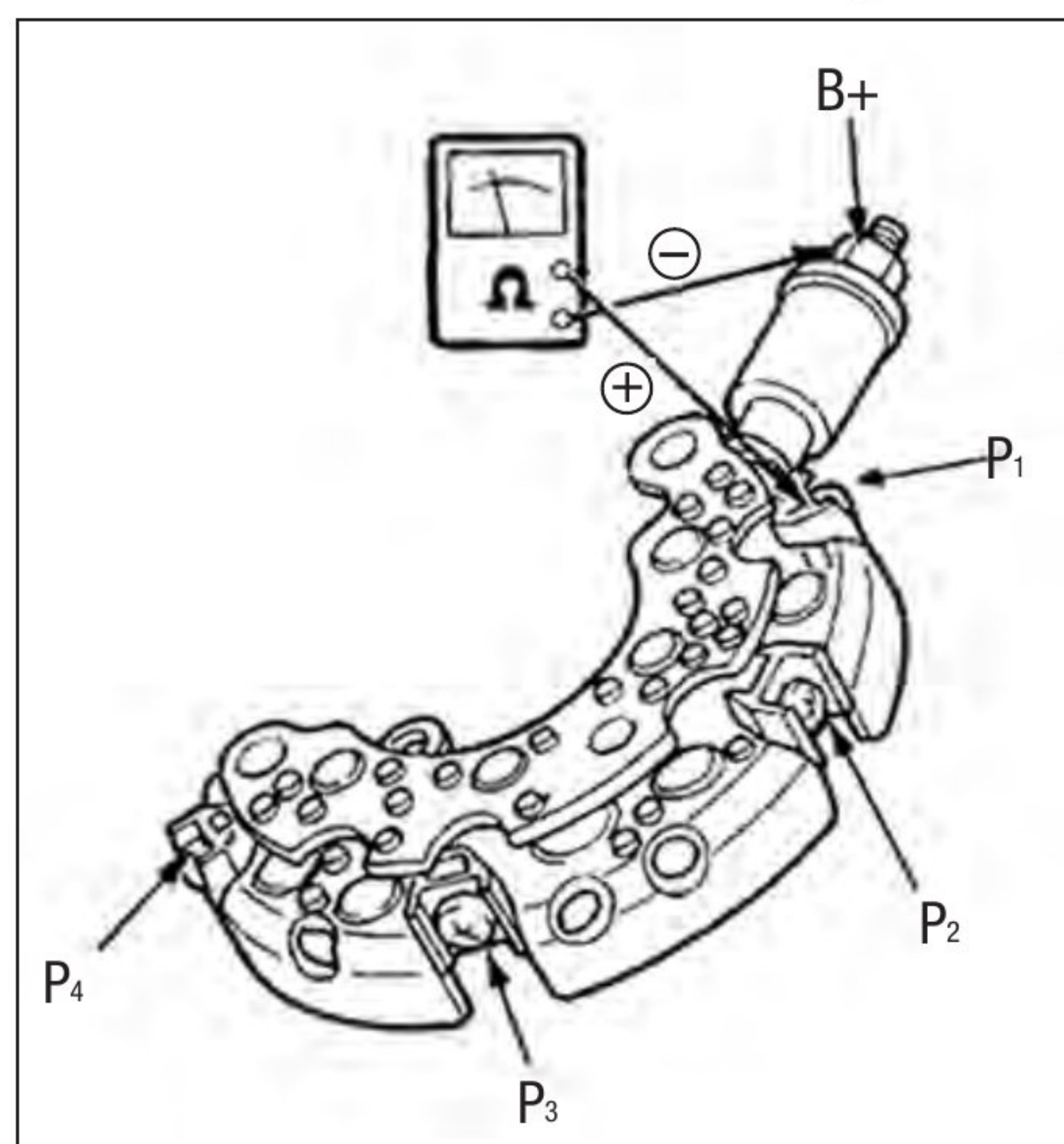
Rectifier Test

Note: The diodes are designed to pass current in one direction and block current in the opposite direction. Since the alternator rectifier is made up of eight diodes (four pairs), each diode must be tested for continuity in both directions; a total of 16 checks.

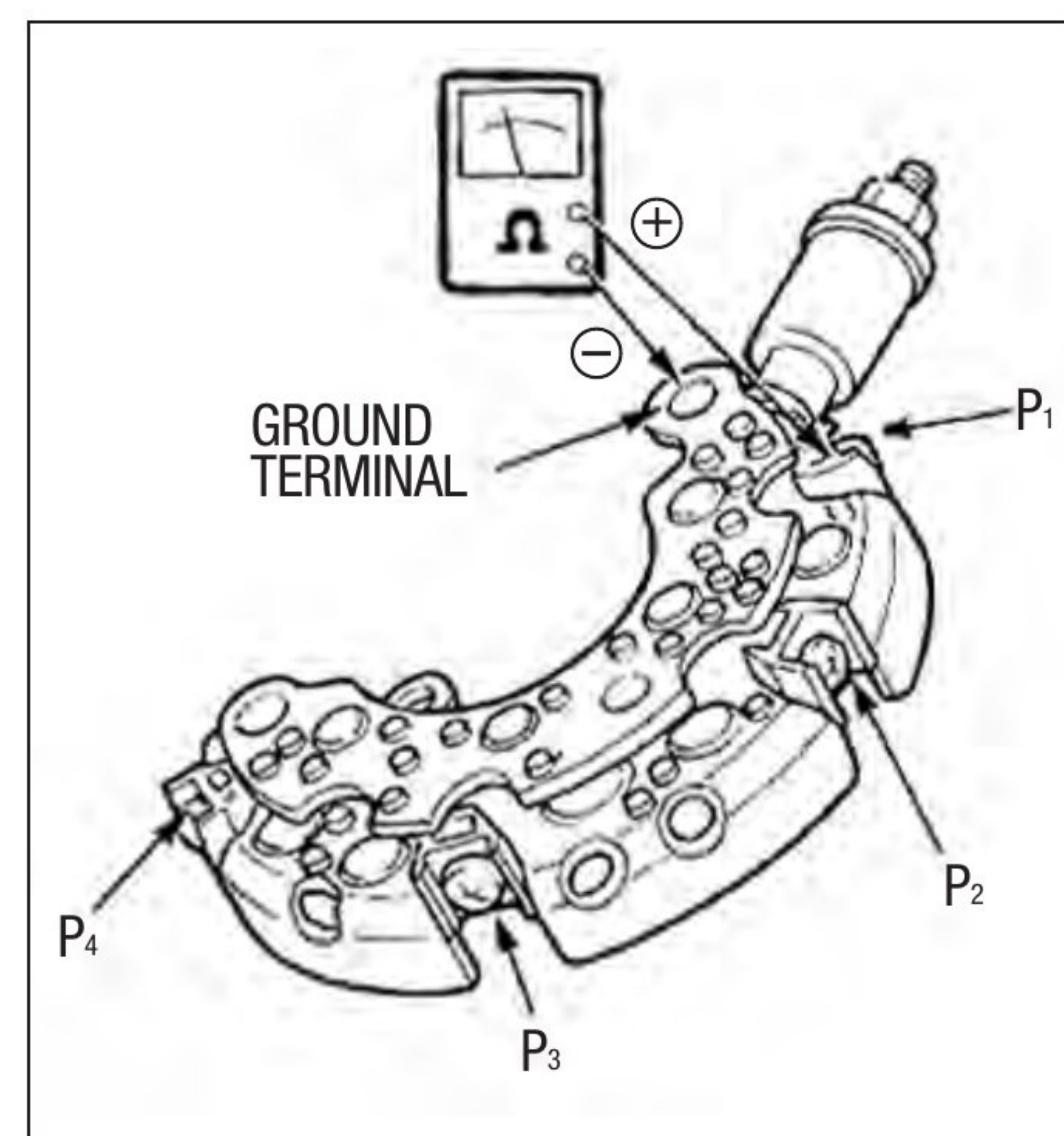
1. Using an ohmmeter or continuity tester (test light), check one diode from each pair, in both directions. Connect **POSITIVE** test probe to B+ terminal and **NEGATIVE** test probe to P terminal of each diode pair. Note readings.



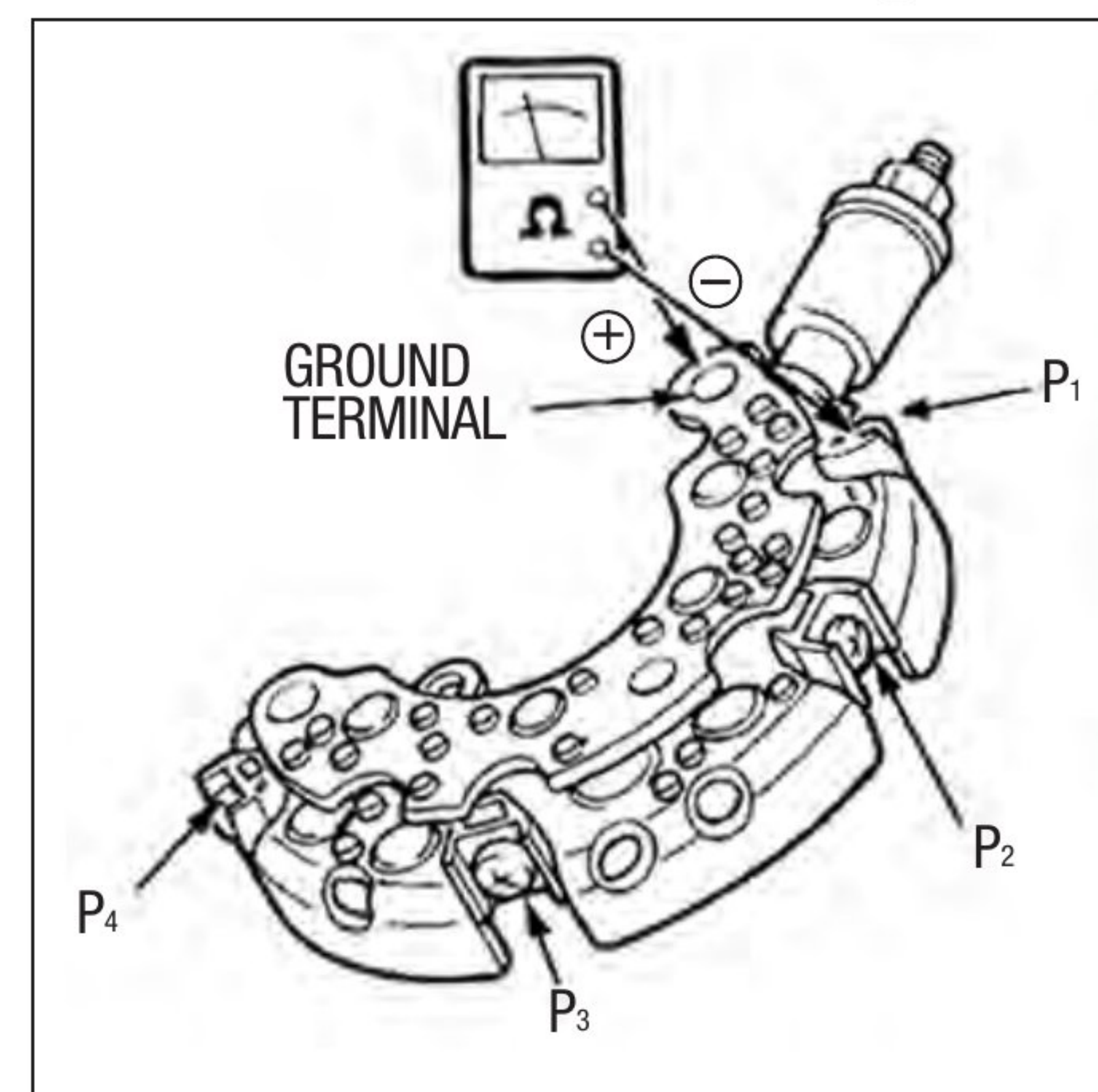
Reverse probe position and check the diodes at P terminals again.



2. Check the other diode from each pair, in both directions. Connect **NEGATIVE** test probe to ground terminal and **POSITIVE** probe to P terminal of each diode pair.



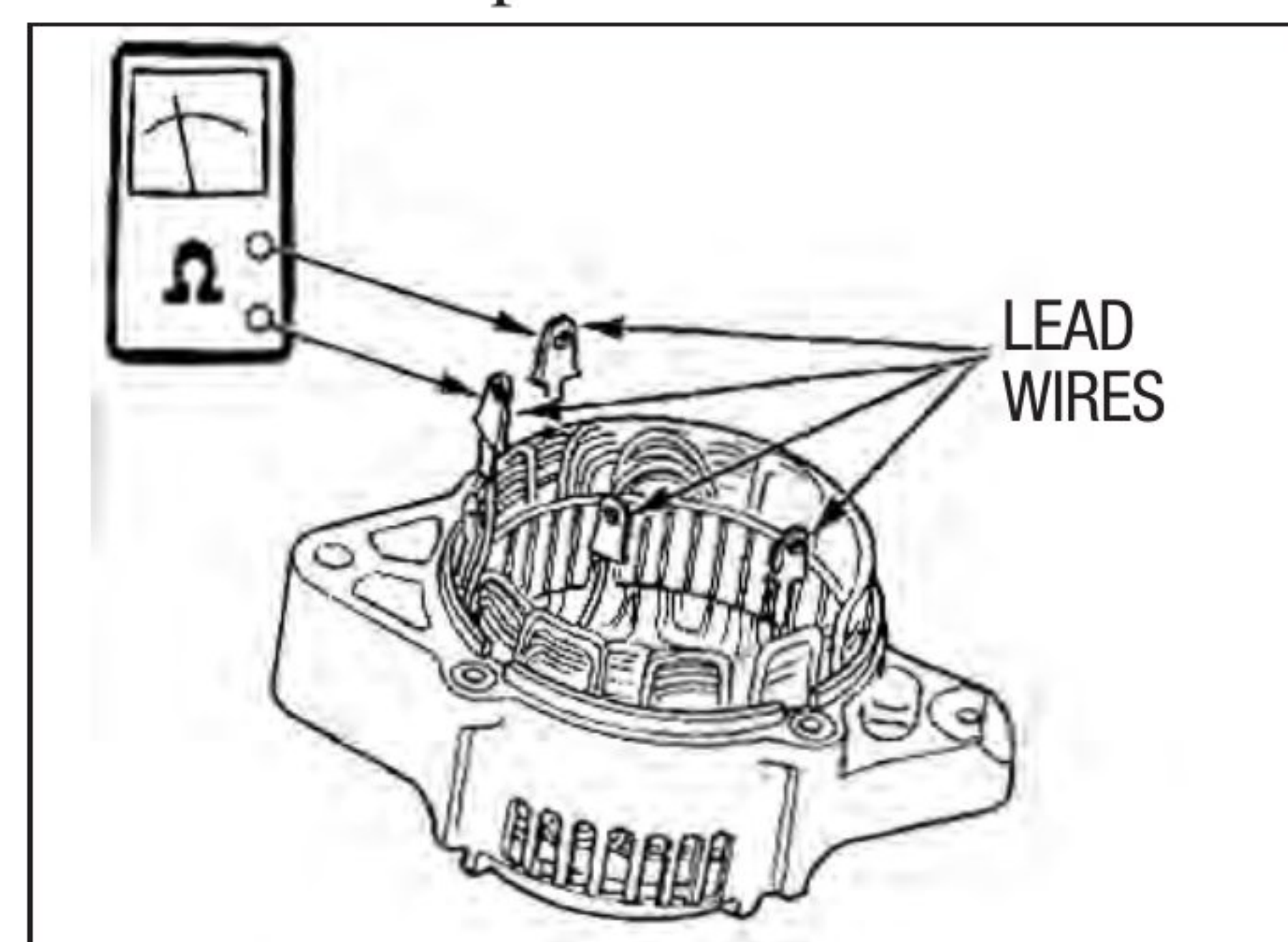
Reverse probe position and check the diodes at P terminals again.



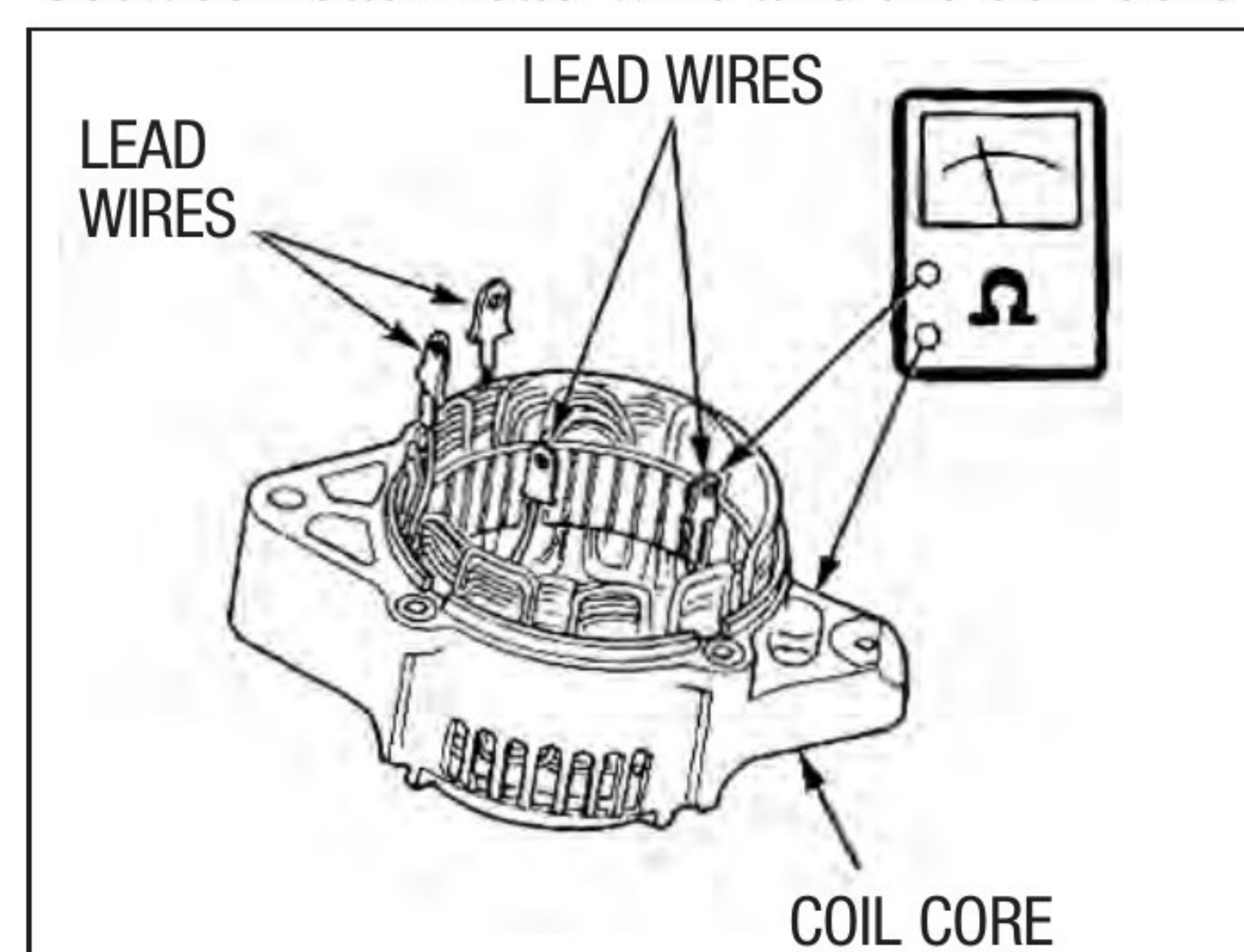
3. If any of the 16 checks shows continuity in both directions, or no continuity in both directions, the diode is defective and the rectifier assembly must be replaced. (Diodes are not available separately.)

Stator Test

Check that there is continuity between each pair of lead wires.



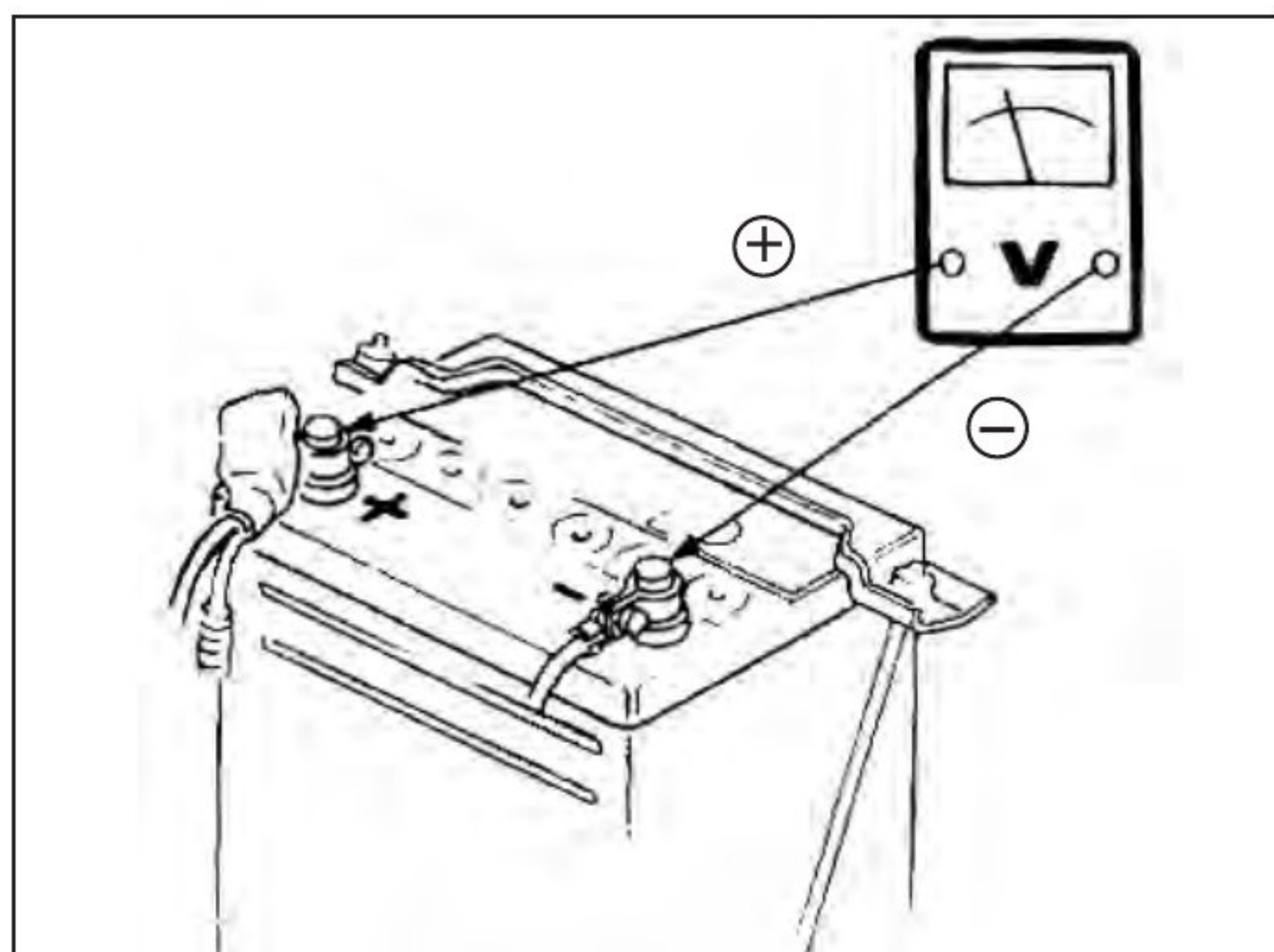
Check that there is no continuity between each lead wire and the coil core.



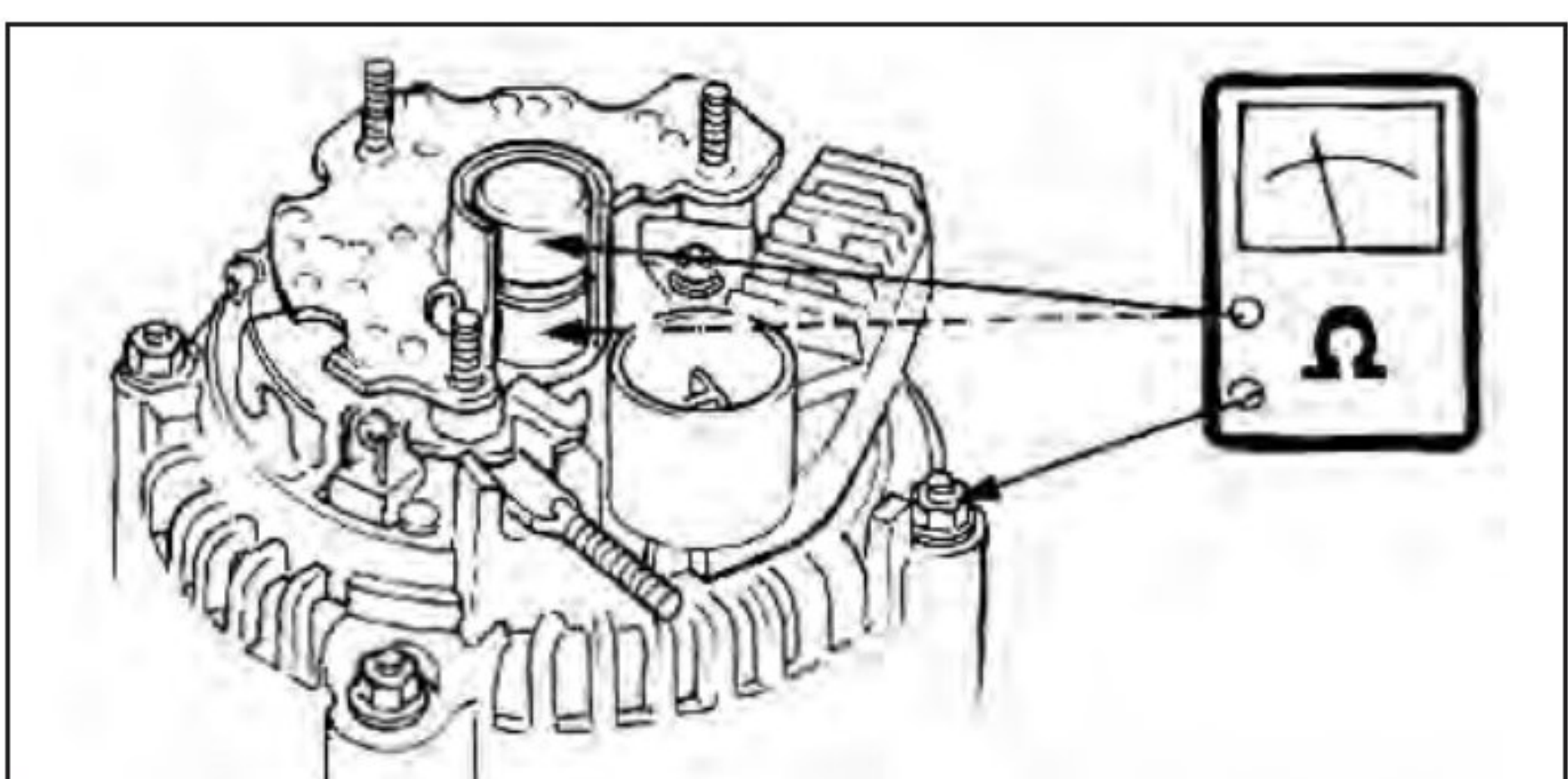
If the coil fails either continuity check, replace the stator.

Alternator and Regulator Test

1. Check the alternator belt tension, and adjust or replace the belt as necessary.
2. Start the engine and take the voltage reading at the battery under no load.



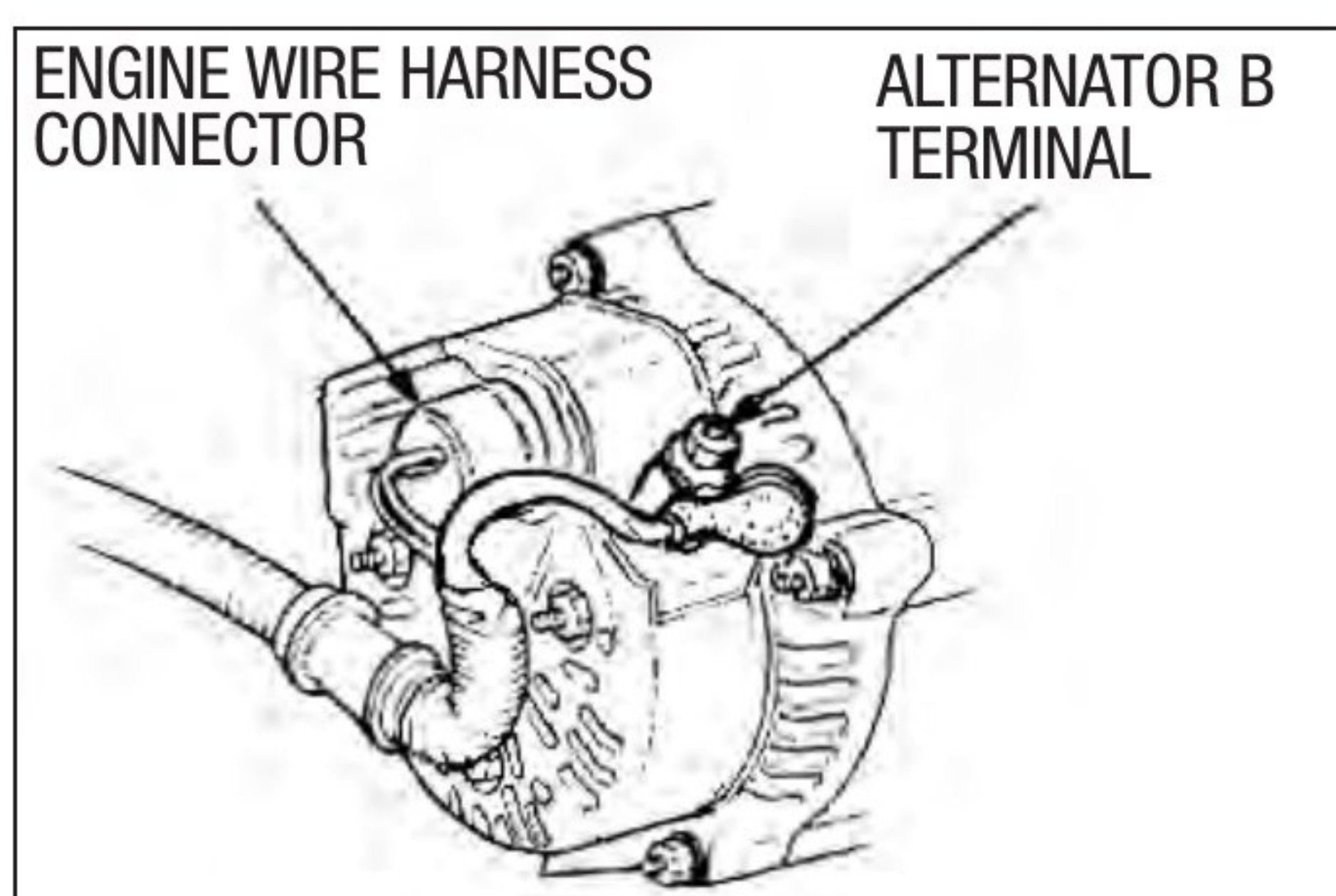
If the reading is 13.9–15.1 volts, check the alternator output. If the reading is more than 15.1 volts, remove the rear end cover and brush holder, and check for continuity between each slip ring and ground.



If either slip ring or both are grounded, the rotor coil is poorly insulated and calls for replacement. If there is no continuity between each slip ring and ground, replace the voltage regulator.

If the reading is about 12 volts, go on to step 3.

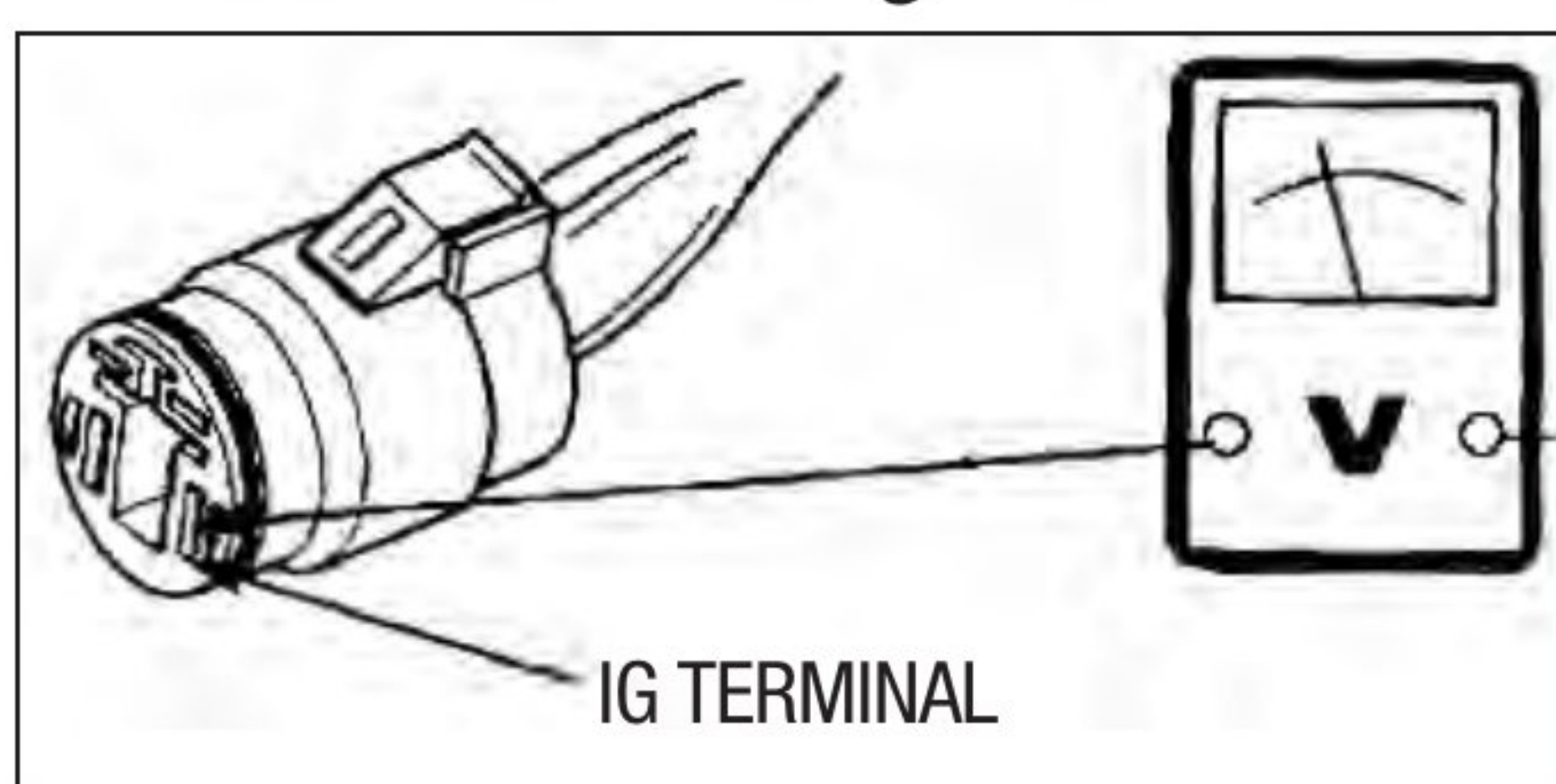
3. With the engine off, check the alternator B terminal and engine wire harness connector for secure connection.



If loose or not connected securely, repair and repeat step 2. If OK, go on to step 4.

4. Stop the engine and disconnect the engine wire harness connector from the alternator. Take the volt-

age reading between the connector IG terminal and ground.



If there is no battery voltage, check the IG terminal wire (black/yellow) and No. 4 fuse (10A). If there is battery voltage, go on to step 5.

5. Check the rectifier and stator.

If OK, replace the voltage regulator. If not OK, repair or replace either the rectifier or stator and go back to step 2.

Reprinted from *Civic CRX/Si Service Manual*, first edition, 1987, Honda Motor Co., Ltd.